Claims 1-4 were next rejected under 35 U.S.C. 102(b) as being anticipated by Kaneto et al. (U.S. Patent No. 5,556,700), since the Examiner asserted that Kaneto et al. shows an actuator consisting of a conjugated polymeric material (**12** or **14** or both) in Fig. 2(b), whereby said material expands when an electrical voltage is applied between two locations thereof (**22** and **24**) and contracts when the electrical voltage is reduced. The Examiner continued by stating that the conjugated polymeric material comprises polyaniline (See Abstract).

Applicants respectfully disagree with the Examiner regarding these reasons for rejecting claims 1-4, for the reasons to be set forth hereinbelow. Reexamination and reconsideration are respectfully requested.

Applicants have amended claims 2 and 4 to specify that the polymeric material comprises doped polyaniline. Support for this change derives from the International Application Published Under The Patent Cooperation Treaty entitled: "Conductive Polymer Compositions," WO 99/24991, PCT/GB98/03241, which was incorporated by reference in the present patent application on lines 6 and 7 of page 6 of the subject Specification, as originally filed. Therein, it is stated on lines 6-8 of page 2 that: "The emeraldine base form of polyaniline, doped with a sulfonic acid, is now well-established as a useful air-stable conductive polymer ... ." Additionally, lines 28-31 of page 2 state that: "... it is thought that the sulfonic acid not only acts as a dopant to make the polyaniline conductive but also as a solvating agent to increase the "solubility" of the polymer ... ." No new matter has been added by the above-described amendments.

The amendment to the paragraph beginning on line 24 and ending on line 27 of page 4 of the subject Specification, as originally filed, was made to correct obvious typographical errors therein. No new matter was introduced by this change.

Briefly, the present invention includes a method of actuation and a conjugated polymer actuator device which expands when an electrical voltage is applied between two locations on the same piece of polymeric material, and contracts when the electrical voltage is reduced or removed, in the absence of

liquids, vapors or metal backing for adding or removing ions from the material. That is, a voltage (or potential difference) is applied between two positions on the same piece of polymer material.

Turning now to the rejection of claims 1-4, under 35 U.S.C. 102(e) as being anticipated Madden et al., applicants wish to direct the Examiner's attention to the Abstract thereof. Therein it is stated that: "Actuators which, when an electrical potential is applied across the electrolyte between the active member and the counter electrode, exert force per unit area of at least 10 MPa are described." Contrary to the description provided by the Examiner, Fig. 4 of Madden et al. shows both ends of the polymeric material, **12**, being kept at the same electric potential, there being a voltage established only between polymeric material **12** and counter electrode, **18** in order for the actuator effect to be observed. There is no voltage or potential difference established between two locations of the polymeric material as is called for by claims 1-4, as amended. Applicants have used the language "consisting" in order to particularly point out that the voltage is applied between two locations on one piece of polymeric material.

In lines 6-11 of Col. 6 of Kaneto et al. it is stated that "The operation of the actuator, **10**, when ionically and electronically non-conductive material is used as the interposed layer, **16**, can be accomplished by placing it in an electrolytic fluid environment so that ionic transfer can occur between the polyaniline salt layer and the electrolyte species." Further, lines 27-29 of Col. 6 of Kaneto et al. state that "Actuators **10** and **40**, employing an ionically conductive material in interposed layers **16**, **46**, can be operated in free space, that is, without an external surrounding electrolyte. Again, the voltage is being applied to two different pieces of polymeric material, not between two locations of a single piece of polymeric material. Applicants have used the language "consisting" in order to particularly point out that the voltage is applied between two locations on one piece of polymeric material.

For the reasons set forth hereinabove, applicants believe that claims 1-4, as amended, are in condition for allowance and such action by the Examiner at

an early date is earnestly solicited. Reexamination and reconsideration are respectfully requested.

Respectfully submitted,

Date: September 26, 2002

Signature of Attorney

Reg. No. 30,459
Phone (970) 377-6363

Samuel M. Freund
The Law Offices of William W. Cochran, LLC
3555 Stanford Road, Suite 230
Fort Collins, Colorado 80525

ATTACHMENT

CLEAN VERSION OF EACH REPLACEMENT PARAGRAPH AND CLAIM

IN THE SPECIFCATION:

On page 3, please amend the paragraph including line 22 as follows:

A1

Preferably, the conjugated polymeric material includes doped polyaniline.

On page 3, please amend the paragraph including line 27 as follows:

A2

Preferably, the conjugated polymeric material includes doped polyaniline.

On page 4, please amend the paragraph beginning on line 24 and ending on line 27 as follows:

A3

Briefly, the present invention includes a method of actuation and an actuator device comprising a conjugated polymeric material which expands when an electrical voltage is applied between two locations thereof in the absence of liquids, vapors or metal backing, and contracts when the electrical voltage is reduced or removed.

IN THE CLAIMS:

Please amend claims 2 and 4 as follows:

A4

2(Amended). The actuator as described in claim 1, wherein said conjugated polymeric material comprises doped polyaniline.

A6

4(Amended). The method of actuation as described in claim 3, wherein said conjugated polymeric material comprises doped polyaniline.